2.5-2.8 Review

Name _____ **Date** _____ **Period** _____

Divide *f(x)* by *d(x)* using long division. Write answer in fraction form. According to the Factor Theorem, is $d(x)$ a factor of $f(x)$? Show work!

1. $f(x)=2x^3-3x^2+4x-8,\ \ d(x)=x-1$ Yes or No

Divide using synthetic division. Write answer in fraction form. Show work!

2. $\dfrac{2x^3+3x^2+4x-10}{x+1}$

Write an equation in factored form and in standard form for the function with the given zeros. Show work!

3. $x=2,\ x=-3,\ \ x=0$

Factored form: _____

Standard form: _____

Factor to find the zeros of each of the following polynomials.

4. $f(x)=x^3+4x^2+3x$

5. $f(x)=x^2-6x-16$

6. **Given** $2x^3+x^2-5x+2$**, which of the following is a factor? Show work!**

$a)\ x+3$

$b)\ x-1$

$c)\ x+2$

Use the Rational Zeros Theorem to write a list of all potential rational zeros. Show work!

7. $f(x)=3x^3+43x^2+43x+27$

Using the given zero, find all of the zeros and write a factored form of *f(x*). Show work!

8. $3i,$ is a zero of $f(x)=x^4-x^3+7x^2-9x-18$

Write a polynomial function of minimum degree in standard form with real coefficients whose zeros include those listed. Show work!

9. $-2 \; and \; 1+2i$

10. **Use Descartes' Rule of Signs to determine the possible number of positive and negative real zeros of the polynomial function. Hint: Use *f*(*x*) to find number of positives and *f*(-*x*) to find number of negatives.**

$f(x) = -x^2 - 5x - 8$

Number of possible positive zeros: _____

$f(-x) =$ _____

Number of possible negative zeros: _____

Find all of the real zeros of the function, finding exact values whenever possible. Identify each zero as rational or irrational. Show work!

11. $f(x) = x^3 + x^2 - 2x - 2$

Zeros	Rational/Irrational

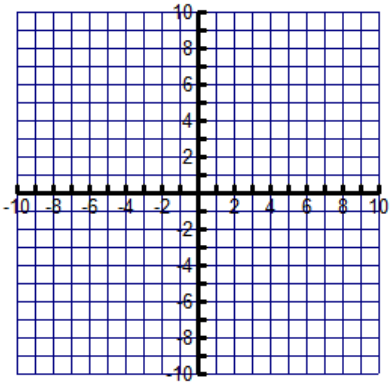
12. Write a polynomial function of minimum degree in <u>standard form</u> with real coefficients whose zeros and their multiplicities include those listed. Find the <u>degree of the polynomial</u>, the <u>*x*-intercepts</u> and <u>sketch the graph.</u> Show work!

leading coefficient: -3

$x = 0$ (multiplicity 1)

$x = 2$ (multiplicity of 2),

$x = -1$ (multiplicity of 1)



Degree: _____

Standard form: _____

x-intercepts: _____